

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:	)	
	)	
STEFAN IHDE	)	Group Art Unit: 3732
	)	
Application No.: 10/714,200	)	Examiner: WERNER, Jonathan S
	)	
Filed: November 14, 2003	)	
	)	
For: Bone-Adaptive Surface Structure	)	
	)	
<u>Attorney Docket No. 74087-006</u>	)	
	)	

St. Louis, Missouri 63105-3441  
January 17, 2008

**MAIL STOP APPEAL BRIEF-PATENTS**

Honorable Commissioner of  
Patents and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

Responsive to the Office action dated December 11, 2007 and pursuant to 37 CFR §41.37, Applicant submits the following Appeal Brief. It is not believed that extensions of time or payment of additional fees are required. However, in the event that any extensions of time or additional fees are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for, and any fees required are hereby authorized to be charged to Deposit Account 08-3460.

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**I. Real Party in Interest**

Biomed Est., a Swiss corporation, to whom the patent application was assigned by Stefan Ihde, is the real party in interest.

**II. Related appeals and interferences**

None.

**III. Status of Claims**

A. Claims 1 – 41 are cancelled. Claims 42-60 are pending and rejected. Claims 61-66 are cancelled. Claims 67-78 are pending and rejected.

B. Appealed Claims

Claims 42-60 and 67-78 are appealed.

**IV. Status of Amendments**

No amendments have been filed subsequent to the final Office Action issued by the Examiner on August 15, 2007.

**V. Summary of Claimed Subject Matter**

The invention concerns bone-adaptive surface structures for lateral jaw implants. Rather than being screwed down into a jaw bone like traditional implants, lateral jaw implants have a shaft and a base that is slid into a T-shaped slot cut into the side of the jaw bone. The shaft extends from the edge of the jaw bone and is threaded for mounting a prosthetic device, usually a tooth. Micromechanical and/or macromechanical surface structures having various forms are incorporated into selected segments of the surface of the base and of the bar that connects the shaft with the base. These surface structures accelerate the healing process after the implant is inserted into the jaw bone. These structures also assist in holding the implant firmly in place without rotation.

The limitations of the appealed claims are supported in the original specification as follows:

42. An osteal implant comprising:

a shaft (see specification, page 7, lines 4-5 (“thread holder”, reference #3, Figures 1, 3, 8 and 10), said shaft having a longitudinal axis (Figures 1, 3, 8 and 10) and having a first end (see specification, page 7, line 1 “screw thread that connects with the prosthesis”, reference #1, Figures 1, 3, 8 and 10) and a second end (see specification, page 7, lines 3-4 “numeral 3 ... connects the annular body with the threads rather,” see Figures 1, 3, 8 and 10) at opposing ends of said longitudinal axis;

said first end having a mount for a device to be implanted (see specification, page 7, lines 1-2 “screw thread that connects with prosthesis”, reference #1, Figures 1, 3, 8 and 10) ;

said second end being attached to a top surface of a base (see **specification, page 7, lines 3-4 “... thread holder which connects the annular body with the threads,” “base”, to page 8, line 4 and Figures 1, 3, and 8**);

said base being substantially orthogonal to said longitudinal axis in at least two non-parallel directions, said base being substantially planar (see **Figures 1, 3, 8 and 10**); at least one of a top surface or a bottom surface of said base having a first height at a first radial distance from said longitudinal axis and a second height at a second radial distance from said longitudinal axis (see **specification, page 7, lines 8-15 through page 9, line 21**);

said first height being maintained through at least two directions radial to said longitudinal axis (see **specification, page 7, lines 8-15 through page 9, line 21**);

said second height being maintained through at least two directions radial to said longitudinal axis, and (see **specification, page 7, lines 8-15 through page 9, line 21**)

both of said top surface and said bottom surface being disposed for osseo integration (see **specification, page 8, lines 11-13, page 8, lines 28-29, page 9, lines 15-21**).

58. An osteal implant comprising

a shaft (see **specification, page 7, lines 4-5 (“thread holder”, reference #3, Figures 1, 3, 8 and 10)** having a longitudinal axis **Figures 1, 3, 8 and 10**) with a first end (see **specification, page 7, line 1 “screw thread that connects with the prosthesis”, reference #1, Figures 1, 3, 8 and 10**) and a second end (see **specification,**

page 7, lines 3-4 **“numeral 3 ... connects the annular body with the threads rather,”**  
see Figures 1, 3, 8 and 10);

said first end having a mount for a device to be implanted (see  
specification, page 7, lines 1-2 **“screw thread that connects with prosthesis”**,  
reference #1, Figures 1, 3, 8 and 10);

said second end being terminally attached to a top surface of a base (see  
specification, page 7, lines 3-4 **“... thread holder which connects the annular body  
with the threads,” “base”**, to page 8, line 4 and Figures 1, 3, and 8);

said base being substantially orthogonal to said longitudinal axis in at least  
two non-parallel directions; and said base being substantially planar (see Figures 1, 3, 8  
and 10);

said base having an inner aspect having a first thickness and said base  
having a peripheral aspect having a second thickness (see specification, page 7, lines 8-  
15 through page 9, line 21).

72. An osteal implant comprising:

a shaft (see specification, page 7, lines 4-5 (**“thread holder”**, reference  
#3, Figures 1, 3, 8 and 10), said shaft being substantially orthogonal to a substantially  
planar base (see Figures 1, 3, 8 and 10) at one end see specification, page 7, lines 3-4  
**“numeral 3 ... connects the annular body with the threads rather,”** see Figures 1, 3,  
8 and 10), said shaft and said base comprising a substantially T-shaped implant end portion  
(See Figures 1, 3, 8 and 10), said T-shaped end portion being disposed for osseointegration  
and an opposite end portion being disposed to protrude from a bone (see specification,  
page 8, lines 11-13, page 8, lines 28-29, page 9, lines 15-21);

at least one surface of said base having a plurality of crests alternating with a plurality of grooves, both said crests and said grooves being curvilinear around said shaft through substantially 180° (see **specification, page 7, lines 8-15 through page 9, line 21**).

**VI. Grounds of Rejection to be reviewed on appeal**

Claims 58-60, 69-71 and 75-78 stand rejected under 35 USC §112(1). The office action refers to “inner aspect” and “peripheral aspect” as “not entirely clear”, *see* office action, page 2, paragraph 2. The office action refers to “leading portion” and “trailing portion” as something the “examiner cannot distinguish”, *see* office action, page 2, paragraph 2. In claim 77, the term “waist” is “not apparent” to the examiner.

Claims 53, 58-60, 69-71, 73, and 75-78 stand rejected under 35 USC §112(2). The office action states that the “examiner does not understand” claim limitations “first side”, “one of said heights” from claim 42 and “first direction”. The same is stated of “inner aspect” in claim 58. The same is stated with respect to “throughholes” in claim 73. The same is stated about “leading portion” and “trailing portion” in claim 75. The same is stated about the width variations in claim 76. The same is stated as to “waist” in claim 77. The same is stated about “leading portion” in claim 78.

Claims 42-43, 46-47, 51, 53, 55, 57-59, 67-71 and 75-78 stand rejected under 35 USC §102(b) as anticipated by Robinson (U.S. 6,238,214). Claim 72 stands rejected under 35 USC §102(b) as anticipated by Albrektsson et al. (WO 01/24737).

Claims 44-45, 48, 54 and 56 stand rejected under 35 USC §103(a) as unpatentable over Robinson in view of Berrang et al (U.S. 6,516,228).

Claim 49 stands rejected under 35 USC §103(a) as unpatentable over Robinson in view of Baege et al. (U.S. 5,965,006).

Claim 50 stands rejected under 35 USC §103(a) as unpatentable over Robinson.

Claim 52 stands rejected under 35 USC §103(a) as unpatentable over Robinson in view of Karmaker (U.S. 6,186,791).

Claim 60 stands rejected under 35 USC §103(a) as unpatentable over Robinson in view of Grafelmann (U.S. 4,538,304).

Claims 72-74 stand rejected under 35 USC §103(a) as unpatentable over Streel (U.S. 4,334,757) in view of Berrang (U.S. 6,516,228).

**VII. Argument**

***35 U.S.C. § 102/103***

All pending claims stand rejected under 35 USC §102 as being anticipated by Robinson (U.S. 6,238,214). All claims also stand rejected under §103 over Robinson in view of other references.

The Office Action's reading of the first independent claim and/or the Robinson reference are necessarily wrong.

The first independent claim presently pending, claim 42, clearly recites two distinct ends of an implant shaft. The first end has a mount for a device to be implanted, typically a prosthetic tooth. This is structurally recited as "said first end having a mount for a device to be implanted." The shaft has an opposite end to which a base is attached. This is structurally recited as, "said second end being attached to a top surface of a base." Thereafter the base itself is structurally recited as being generally planar and perpendicular to the shaft. Accordingly, the claims structurally recite the requirement that the tooth end and base end be opposite ends of the shaft, and that the planar, perpendicular base be opposite the tooth end.

The primary reference, the Robinson '214 patent, has a generally perpendicular structure relied upon in the office action to anticipate or render obvious the "base" of the currently pending claims. This appears at reference numbers 12 and 30 in Figures 11 and 17 of the reference as noted in the office action. Structure 12 also appears in Figures 4, 5, 9 and 14. These figures make clear that the structure 12, 30 is not at an opposite end of the shaft from a "device to be implanted" end, i.e., the tooth end, as claimed, but rather at the same end.

Because the reference and the structure recited in the claims teach the completely opposite positioning of the member alleged to be a “base,” the ‘214 patent cannot anticipate the presently pending claims.

The text accompanying the drawings in Robinson makes clear that the plate 12 cited in the office action as teaching a perpendicular “base” is not a base. It is actually a “guided tissue regeneration plate 12”. *See* Col. 6, l. 3-44. It goes on to teach that upon implantation (the opposing end of the shaft therein having no base and being implanted by axial insertion into the hole drilled for it, which is opposed to the teaching of the present application in which the implant is implanted laterally), the plate 12, at the tooth end of the shaft, is bent around to touch the gums in order to create a space 13 which is an “... area where new bone will grow, the space having been created by the guided tissue regeneration plate support and fixation system of the invention.” *See*, Col. 2, l. 46-50. Thereafter the specification goes on to describe bone growing into the empty space created by the dentist bending the plate around from the tooth end of the implant shaft.

An Advisory Action responds to applicant pointing out this obvious mistake with the following;

“Applicant next alleges that the reference number 12 recited in previous office action has a perpendicular base, but it is ‘actually a guided tissue regeneration plate.’ As noted above, examiner never referenced element 12 in the previous rejection, and instead referenced element 30 as representative of the claim “base.” *See* Advisory Action before filing an appeal brief

Element 30 in the Robinson reference is also a “... guided tissue regeneration plate 30,” not a base. *See* column 7, line 41, column 7, line 35 and column 7, line 46, et seq.

Next the mistaken reading of the claims onto the Robinson reference is defended by quoting a definition of “base” as “the bottom support of anything.” Thereafter the Advisory Action states, “clearly the ‘plate’ (30) of Robinson acts as the bottom support for shaft (11), or in other words, the plate is that on which the shaft stands or rests.” To the contrary, the Robinson reference makes clear that elements 12 and 30 are neither a bottom nor supporting. Support is in fact lent by the “support screw 11” in Figure 13 cited by the examiner. The element 12, 30, the guided tissue regeneration plate, being thin and bent to define a space into which the tissue is to regenerate, is what needs to be supported, and is not what lends support. *See* column 6, lines 49-53 of the Robinson reference, “the guided tissue regeneration plate support screw 11 is placed into the bony ridge 3. After the guided tissue regeneration plate 12 is affixed to the guided tissue regeneration plate support screw 11 by snapping it in place, the plate is molded into shape by bending the edges down as shown.” In contrast, the base portion (2) presently claimed actually does support the shaft to which it is connected. “It has been determined that implants of this type transfer the masticatory force essentially into the peripheral annular section of the base 2 ...”. *See* present application, page 7, lines 6-8. Hence comments in this Advisory Action support applicant’s position.

Finally, the examiner argues that the elements 12, 30 of Robinson are “that on which a thing stands or rests.” This is clearly inapposite as well. The device of Robinson does not stand or rest on anything. It has no “bottom.” It is screwed into the gums of a patient. It is not even assembled until after the support screw is implanted in a jaw bone. If anything, the tissue regeneration plate 12, 30 rests at the end of the shaft after the shaft has been implanted in the jaw.

Moreover, elements 12 and 30 are to be removed from the shaft 17 or the shaft 11 to which it is attached in the Figures cited by the examiner, 13 and 17. They are not a base. As indicated in most of the drawings and in most of the specification, i.e., Figures 4, 5, 6, 9, 14, elements 12 and 30, the guided tissue regeneration plates, are bent in use and are not planar or perpendicular to the shaft, as claimed.

Finally, of course, to return to the elemental opposites embodied by the present claims and the Robinson reference, the tissue regeneration plates 12, 30 are removed from one end of the shaft 11, 13 and *replaced by a tooth*, see Figure 10, column 7, lines 17-26. *This tooth end and the end to which plate 12, 30 are attached in Robinson are the same end.* The present claims recite “a first end having a mount for a device to be implanted”. The first sentence of the detailed description states, “As can be seen in Figure 1, 1 indicates the screw thread that connects with the prosthesis”. See, page 7, lines 1-2. Hence the Advisory Action’s excuse that no “tooth end” is claimed to distinguish the two ends of the shaft in the presently pending claims is disingenuous at best. The device to be implanted is clearly at one end, and the base clearly at the other. Accordingly, the Robinson reference cannot anticipate.

The Robinson reference does not teach anything remotely similar to the lateral implant base and shaft structure of the present invention. It does not teach, suggest or motivate a lateral implant with a substantially perpendicular base. Under KSR analysis it is not reciting a prior structure that is the same as the present invention. Even if it did, that structure would be performing a radically different function than the function taught by the bendable “guided tissue regeneration” plate taught in the reference. The reference teaches away, by teaching a threaded screw insert, without any perpendicular element in the base.

**35 USC 112**

The claim limitations to “an inner aspect” and “a peripheral aspect” structurally recited in claim 58 are perfectly clear from the specification, which describes varying thicknesses of the base portion between page 7, line 29 and page 8, line 13 and in Figure 3 which graphically depicts the different heights quite plainly. Moreover, Figures 8, 9 and 10 and the specification on page 9, lines 10 through 21 further recite different inner and peripheral aspects of the device having different heights. Applicant is entitled to claim broadly. The standard is not whether the “examiner can distinguish” any degree of precision that is gratifying to him, but rather whether or not one of skill in the art would be adequately apprised of the applicant’s possession of the structure recited in the claims and that the structure recited, and supported in the specification and figures, particularly points out and distinctly claims that which the applicant regards as his invention. One of ordinary skill in the art reviewing the claim in light of the specification would understand that the base was thicker at some point closer to the shaft and thinner at some peripheral point on the base and would further understand what is readily apparent; that any such thickness variation between inner and outer portions of the base is within the scope of the claim. The rule does not require the applicant to claim narrowly, it requires the applicant to particularly point out to one of skill in the art what is within and without the scope of the claim. The currently pending claims comply with the statutory standard.

Similarly, the “leading portion” and “trailing portion” of the base in claim 75 are clearly demarcated with arrows in Figures 1A and 1B and, Figure 3, Figure 5 and Figure 7 and in the text at page 8, line 20.

The “waist” recited in claim 77 is clearly depicted at Figure 9. One of ordinary skill in the art would have no trouble discerning what is claimed or understanding its scope.

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Similarly, the “first side” and “first direction” recited in claim 53 are readily apparent to those of skill in the art, and indeed to the lay person, in Figure 7 and in the text at page 9, lines 1-9. The same is true of claim 73, which refers to a bar, clearly depicted throughout the specification as bar 4, for example at page 7, lines 5-6. The structurally recited “throughholes” that define the boundaries of the bar 4 are readily apparent both to one of ordinary skill in the art and to the layman at plan views 1B, 1C, 2 and 9, which clearly label the base portion 2 and the bar portion 4 and the through holes therebetween.

**VIII. Conclusion**

Applicant requests allowance of the presently pending, appealed claims.

Respectfully submitted,



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**IX. CLAIMS APPENDIX**

Claims Unmarked

42. An osteal implant comprising:
- a shaft, said shaft having a longitudinal axis and having a first end and a second end at opposing ends of said longitudinal axis;
  - said first end having a mount for a device to be implanted;
  - said second end being attached to a top surface of a base;
  - said base being substantially orthogonal to said longitudinal axis in at least two non-parallel directions, said base being substantially planar; at least one of a top surface or a bottom surface of said base having a first height at a first radial distance from said longitudinal axis and a second height at a second radial distance from said longitudinal axis;
  - said first height being maintained through at least two directions radial to said longitudinal axis;
  - said second height being maintained through at least two directions radial to said longitudinal axis, and
  - both of said top surface and said bottom surface being disposed for osseo integration.
43. The implant of claim 42 wherein said first height is maintained through an arc between said at least two directions radial to said longitudinal axis.
44. The implant of claim 42 wherein said first height and second height alternate periodically.

45. The implant of claim 42 wherein said first height and second height alternate, said alternation comprising corrugation.

46. The implant of claim 42 wherein at least one of said heights has a sharp edge.

47. The implant of claim 42 further comprising a third height, said third height being a different radial distance from said longitudinal axis than either said first height or said second height.

48. The implant of claim 42 wherein at least one of said heights varies in said radial direction to comprise a spiral.

49. The implant of claim 42 wherein at least one of said heights comprises a plurality of bowl like depressions.

50. The implant of claim 42 wherein said heights vary in a range from about 0.05 millimeters to about 0.25 millimeters.

51. The implant of claim 42 wherein said base has an outer perimeter and said outer perimeter includes at least three substantially straight edges.

52. The implant of claim 42 wherein said first and second height comprise barbs oriented to resist extraction of said implant in at least one direction.

53. The implant of claim 42 wherein said at least one of said heights comprises ridges, said ridges being curvilinear on a first side of said base and concave to a first direction and said ridges being substantially rectilinear on a base side substantially opposite from said first side.

54. The implant of claim 42 wherein at least one of said first height or said second height repeat and vary in extent radially.

55. The implant of claim 42 wherein said second height is at a marginal zone of said base, said marginal zone being substantially along a height of a periphery of said base.

56. The implant of claim 55 wherein said marginal zone varies in radial distance from said longitudinal axis.

57. The implant of claim 55 wherein said marginal zone comprises reentrant angles.

58. An osteal implant comprising  
a shaft having a longitudinal axis with a first end and a second end;  
said first end having a mount for a device to be implanted;  
said second end being terminally attached to a top surface of a base;  
said base being substantially orthogonal to said longitudinal axis in at least two non-parallel directions; and said base being substantially planar;  
said base having an inner aspect having a first thickness and said base having a peripheral aspect having a second thickness.

59. The implant of claim 58 wherein a radial width of said peripheral aspect varies.

60. The implant of claim 58 wherein said first thickness varies.

67. The implant of claim 42 wherein both said first height and said second height are maintained through an arc between at least two directions radial to said longitudinal axis.

68. The implant of claim 67 wherein said arc is substantially 180°.

69. The implant of claim 58 wherein said first thickness is greater than said second thickness.

70. The implant of claim 58 wherein said peripheral aspect is intermittent around a circumference of said base.

71. The implant of claim 58 wherein a radial width of said inner aspect varies.

72. An osteal implant comprising:

a shaft, said shaft being substantially orthogonal to a substantially planar base at one end, said shaft and said base comprising a substantially T-shaped implant end portion, said T-shaped end portion being disposed for osseointegration and an opposite end portion being disposed to protrude from a bone;

at least one surface of said base having a plurality of crests alternating with a plurality of grooves, both said crests and said grooves being curvilinear around said shaft through substantially 180°.

73. The osteal implant of claim 72 further comprising at least two through holes in said base, said through holes defining a bar, said bar running substantially through a center of said base, said bar being attached to said shaft, and said holes defining a base peripheral area;

wherein said alternating crests and grooves are on said peripheral area.

74. The osteal implant of claim 73 wherein said peripheral area is substantially rectilinear over about one-half of said base.

75. The implant of claim 58 wherein said base has a leading portion and a trailing portion; and

wherein said inner aspect has a boundary, said boundary having a first width oriented towards said leading portion of said base and said boundary having a narrower width oriented towards said trailing portion of said base.

76. The implant of claim 75 wherein variations in said width of said boundary are symmetrical around a direction of insertion defined by said leading portion and said trailing portion.

77. The implant of claim 75 wherein said narrower width of said boundary of said inner aspect comprises a waist on said trailing portion of said base.

78. The implant of claim 58 wherein said base has a leading portion and wherein said peripheral aspect along a leading edge of said leading portion is thinner than said inner aspect.

Claims Marked to Show Amendments

1 – 41. (Cancelled)

42. (Currently Amended) An osteal implant comprising:

a ~~post~~ shaft, said ~~post~~ shaft having a longitudinal axis and having a first end and a second end at opposing ends of said longitudinal axis;

said first end having a mount for a device to be implanted;

said second end being attached to a top surface of a base;

said base being substantially orthogonal to said ~~post~~ longitudinal axis in at least two non-parallel directions, said base being substantially planar; at least one of a top surface or a bottom surface of said base having a first height at a first radial distance from said ~~post~~ longitudinal axis and a second height at a second radial distance from said ~~post~~ longitudinal axis;

said first height being maintained through at least two directions radial to said ~~post~~ longitudinal axis;

said second height being maintained through at least two directions radial to said ~~post~~ longitudinal axis, and

both of said top surface and said bottom surface being disposed for osseo integration.

43. (Currently Amended) The implant of claim 42 wherein said first height is maintained through an arc between said at least two directions radial to said ~~post~~ longitudinal axis.

44. (Previously Presented) The implant of claim 42 wherein said first height and second height alternate periodically.

45. (Currently Amended) The implant of claim 42 wherein said first height and second height alternate, said alternation comprising corrugation.

46. (Currently Amended) The implant of claim 42 wherein at least one of said heights has a sharp edge.

47. (Currently Amended) The implant of claim 42 further comprising a third height, said third height being a different radial distance from said ~~post~~ longitudinal axis than either said first height or said second height.

48. (Previously Presented) The implant of claim 42 wherein at least one of said heights varies in said radial direction to comprise a spiral.

49. (Currently Amended) The implant of claim 42 wherein at least one of said heights comprises a plurality of bowl like depressions.

50. (Previously Presented) The implant of claim 42 wherein said heights vary in a range from about 0.05 millimeters to about 0.25 millimeters.

51. (Previously Presented) The implant of claim 42 wherein said base has an outer perimeter and said outer perimeter includes at least three substantially straight edges.

52. (Currently Amended) The implant of claim 42 ~~having a lateral insertion direction and~~ wherein said first and second height comprise barbs oriented to resist extraction of said implant in at least one a direction ~~opposite said direction of insertion~~.

53. (Currently Amended) The implant of claim 42 wherein said at least one of said heights comprises ridges, said ridges being curvilinear on a first side of said base and concave to a first direction ~~of insertion~~ and said ridges being substantially ~~vertical~~

rectilinear on a base side oriented substantially opposite from ~~the direction of insertion~~  
said first side.

54. (Previously Presented) The implant of claim 42 wherein at least one of said first height or said second height repeat and vary in extent radially.

55. (Previously Presented) The implant of claim 42 wherein said second height is at a marginal zone of said base, said marginal zone being substantially along a height of a periphery of said base.

56. (Currently Amended) The implant of claim 55 wherein said marginal zone varies in radial distance from said postlongitudinal axis.

57. (Previously Presented) The implant of claim 55 wherein said marginal zone comprises reentrant angles.

58. (Currently Amended) An osteal implant comprising ~~a post, said post~~  
~~having~~

a shaft having a longitudinal axis with a first end and a second end;

said first end having a mount for a device to be implanted;

said second end being terminally attached to a top surface of a base;

said base being substantially orthogonal to said ~~post~~ longitudinal axis in at least two non-parallel directions; and said base being substantially planar;

said base having an inner aspect having a first thickness ~~at a first radius in~~  
~~two radial directions~~ and said base having a peripheral aspect having a second thickness.  
~~at a second radius, said second radius being wider than said first radius in at least one~~  
~~direction.~~

59. (Currently Amended) The implant of claim 58 wherein a radial width of said peripheral aspect ~~said first radius~~ varies. ~~with its direction.~~

60. (Previously Presented) The implant of claim 58 wherein said first thickness varies.

61- 66 (Cancelled)

67. (New) The implant of claim 42 wherein both said first height and said second height are maintained through an arc between at least two directions radial to said longitudinal axis.

68. (New) The implant of claim 67 wherein said arc is substantially 180°.

69. (New) The implant of claim 58 wherein said first thickness is greater than said second thickness.

70. (New) The implant of claim 58 wherein said peripheral aspect is intermittent around a circumference of said base.

71. (New) The implant of claim 58 wherein a radial width of said inner aspect varies.

72. (New) An osteal implant comprising:

a shaft, said shaft being substantially orthogonal to a substantially planar base at one end, said shaft and said base comprising a substantially T-shaped implant end portion, said T-shaped end portion being disposed for osseointegration and an opposite end portion being disposed to protrude from a bone;

at least one surface of said base having a plurality of crests alternating with a plurality of grooves, both said crests and said grooves being curvilinear around said shaft through substantially 180°.

73. (New) The osteal implant of claim 72 further comprising at least two through holes in said base, said through holes defining a bar, said bar running substantially through a center of said base, said bar being attached to said shaft, and said holes defining a base peripheral area;

wherein said alternating crests and grooves are on said peripheral area.

74. (New) The osteal implant of claim 73 wherein said peripheral area is substantially rectilinear over about one-half of said base.

75. (New) The implant of claim 58 wherein said base has a leading portion and a trailing portion; and

wherein said inner aspect has a boundary, said boundary having a first width oriented towards said leading portion of said base and said boundary having a narrower width oriented towards said trailing portion of said base.

76. (New) The implant of claim 75 wherein variations in said width of said boundary are symmetrical around a direction of insertion defined by said leading portion and said trailing portion.

77. (New) The implant of claim 75 wherein said narrower width of said boundary of said inner aspect comprises a waist on said trailing portion of said base.

78. (New) The implant of claim 58 wherein said base has a leading portion and wherein said peripheral aspect along a leading edge of said leading portion is thinner than said inner aspect.

**X. Evidence Appendix**

- A. Robinson – U.S. 6,238,214
- B. Albrektsson et al. – WO 01/24737
- C. Berrang et al. – U.S. 6,516,228
- D. Baege et al. – U.S. 4,965,006
- E. Karmaker – U.S. 6,186,791
- F. Grafelmann – U.S. 4,538,304
- G. Streel – U.S. - 4,344,757